

Study Findings: Wave 1

In Wave 1 of this study, the cognitive interviews and focus group were used to gather initial data about mothers' ability to answer the set of test questions in an appropriate manner. While mothers were generally able to answer the test questions, there were some notable areas of difficulty encountered with regards to terminology used, answering over a period of time (24 hours vs. a week), and using the response options. Table 2 presents the original set of questions used for this round of data collection.

Table 2. The Initial Set of ECLS-B Test Questions

1. During the past 7 days, how many glasses of milk did your child drink? Include all types of milk, including cow's milk, soy milk or any other kind of milk; include the milk your child drank in a glass or cup, from a carton, or with cereal. Count the half pint of milk served at school as equal to one glass.

- 1 *Child did not drink milk during the past 7 days.*
- 2 *1 to 3 glasses during the past 7 days.*
- 3 *4 to 6 glasses during the past 7 days.*
- 4 *1 glass per day.*
- 5 *2 glasses per day.*
- 6 *3 glasses per day.*
- 7 *4 or more glasses per day.*
- DK *DON'T KNOW*
- RF *REFUSED*

2. What kind of milk did your child usually (most often) drink during the past 7 days?

- 1 *Whole milk*
- 2 *2% milk.*
- 3 *Skim milk.*
- 4 *Low fat or 1% milk.*
- 5 *Soy milk.*
- 6 *Both regular milk and soy milk.*
- 7 *Some other kind of milk.*
- DK *DON'T KNOW*
- RF *REFUSED*

3. During the past 7 days, how many times did your child drink 100% fruit juices such as orange juice, apple juice, or grape juice? Do not count punch, Sunny Delight, Kool-Aid, sports drinks, or other fruit-flavored drinks.

- 1 *Child did not drink 100% fruit juice during the past 7 days.*
- 2 *1 to 3 times during the past 7 days.*
- 3 *4 to 6 times during the past 7 days.*
- 4 *1 time per day.*
- 5 *2 times per day.*
- 6 *3 times per day.*
- 7 *4 or more times per day.*
- DK *DON'T KNOW*
- RF *REFUSED*

4. During the past 7 days, how many times did your child drink Soda pop (for example, Coke, Pepsi, or Mountain Dew), sports drinks (for example, Gatorade), or fruit drinks that are not 100% fruit juice (for example, Kool-Aid, Sunny Delight, Hi-C, Fruitopia, or Fruitworks)?

- 1 *Child did not drink any during the past 7 days.*
- 2 *1 to 3 times during the past 7 days.*
- 3 *4 to 6 times during the past 7 days.*
- 4 *1 time per day.*
- 5 *2 times per day.*
- 6 *3 times per day.*
- 7 *4 or more times per day.*
- DK *DON'T KNOW*
- RF *REFUSED*

Table 2. The Initial Set of ECLS-B Test Questions

5. During the past 7 days, how many times did your child eat fresh fruit such as apples, bananas, oranges, berries, or other fruit such as applesauce, canned peaches, canned fruit cocktail, or frozen berries? (Do not count fruit juice.)

1 *Child did not eat fruit during the past 7 days.*

2 *1 to 3 times during the past 7 days.*

3 *4 to 6 times during the past 7 days.*

4 *1 time per day.*

5 *2 times per day.*

6 *3 times per day.*

7 *4 or more times per day.*

DK *DON'T KNOW*

RF *REFUSED*

6. During the past 7 days, how many times did your child eat green salad?

1 *Child did not eat green salad during the past 7 days.*

2 *1 to 3 times during the past 7 days.*

3 *4 to 6 times during the past 7 days.*

4 *1 time per day.*

5 *2 times per day.*

6 *3 times per day.*

7 *4 or more times per day.*

DK *DON'T KNOW*

RF *REFUSED*

7. During the past 7 days, how many times did your child eat potatoes? (DO NOT count French Fries, fried potatoes, or potato chips).

1 *Child did not eat potatoes during the past 7 days.*

2 *1 to 3 times during the past 7 days.*

3 *4 to 6 times during the past 7 days.*

4 *1 time per day.*

5 *2 times per day.*

6 *3 times per day.*

7 *4 or more times per day.*

DK *DON'T KNOW*

RF *REFUSED*

8. During the past 7 days, how many times did your child eat carrots?

1 *Child did not eat carrots during the past 7 days.*

2 *1 to 3 times during the past 7 days.*

3 *4 to 6 times during the past 7 days.*

4 *1 time per day.*

5 *2 times per day.*

6 *3 times per day.*

7 *4 or more times per day.*

DK *DON'T KNOW*

RF *REFUSED*

Table 2. The Initial Set of ECLS-B Test Questions

9. During the past 7 days, how many times did your child eat other vegetables? (DO NOT count green salad, potatoes, French fries, or carrots.)

- 1 *Child did not eat other vegetables during the past 7 days.*
- 2 *1 to 3 times during the past 7 days.*
- 3 *4 to 6 times during the past 7 days.*
- 4 *1 time per day.*
- 5 *2 times per day.*
- 6 *3 times per day.*
- 7 *4 or more times per day.*
- DK *DON'T KNOW*
- RF *REFUSED*

10. During the past 7 days, about how many times did your child eat a meal or snack from a fast food restaurant such as McDonald's Pizza Hut, Burger King, KFC (Kentucky Fried Chicken), Taco Bell, Wendy's and so on? Would you say:

- 1 *Child did not eat food from a fast food restaurant during the past 7 days.*
- 2 *1 to 3 times during the past 7 days.*
- 3 *4 to 6 times during the past 7 days.*
- 4 *1 time per day.*
- 5 *2 times per day.*
- 6 *3 times per day.*
- 7 *4 or more times per day.*
- DK *DON'T KNOW*
- RF *REFUSED*

11. During the past 7 days, how many times did your child eat candy, ice cream, cookies, cakes, brownies, or other sweets? Would you say:

- 1 *Child did not eat sweets during the past 7 days.*
- 2 *1 to 3 times during the past 7 days.*
- 3 *4 to 6 times during the past 7 days.*
- 4 *1 time per day.*
- 5 *2 times per day.*
- 6 *3 times per day.*
- 7 *4 or more times per day.*
- DK *DON'T KNOW*
- RF *REFUSED*

12. During the past 7 days, how many times did your child eat potato chips, corn chips (Fritos, Doritos), Cheetos, pretzels, popcorn, crackers or other salty snack foods?

- 1 *Child did not eat salty snack foods during the past 7 days.*
- 2 *1 to 3 times during the past 7 days.*
- 3 *4 to 6 times during the past 7 days.*
- 4 *1 time per day.*
- 5 *2 times per day.*
- 6 *3 times per day.*
- 7 *4 or more times per day.*
- DK *DON'T KNOW*
- RF *REFUSED*

Table 2. The Initial Set of ECLS-B Test Questions

13. During the past 7 days, how many times did your child eat French fries or fried potatoes?
- 1 *Child did not eat French fries or fried potatoes during the past 7 days.*
 - 2 *1 to 3 times during the past 7 days.*
 - 3 *4 to 6 times during the past 7 days.*
 - 4 *1 time per day.*
 - 5 *2 times per day.*
 - 6 *3 times per day.*
 - 7 *4 or more times per day.*
- DK *DON'T KNOW*
RF *REFUSED*

In Wave 1, nine cognitive interviews were conducted and nine mothers participated in the focus group, for a total of 18 mothers as respondents in this wave of the study. Interestingly, half of the mothers in Wave 1 were stay-at-home moms who spent a great deal of time with their youngest children, including those in the kindergarten or first grade.

Overall, Wave 1 respondents were diverse by age, ethnicity/race, income, and by number of children in the household. Out of the nine cognitive respondents, 33% were African American, and 67% were Caucasian, with one respondent identifying as Hispanic /Latino. Most of the mothers interviewed had completed at least some college, but there were two respondents that only had a high school education. The mothers that participated in the cognitive interviews were slightly older parents: four mothers were in the 40-49 age group, while three mothers were in the 30-39 age group. In Wave 1, three mothers were parents of kindergarten children, while the remaining had first graders. Five of the mothers interviewed had three or more children, while three mothers had only one child. The focus group participants were similarly diverse by age, ethnicity/race, income, and by number of children in the household. Four of the nine mothers were African American, while five were Caucasian. Half of the mothers in the focus group had more than one child, and most of the mothers had some college or completed college.

Understanding Of The Terminology

- a. Do the respondents interpret the questions, as asked, in the manner intended by ERS? If not, are there changes in wording that will improve understanding?

Table 3 presents the answers provided to the eating habit questions by Wave 1 respondents in the cognitive interviews. As the table depicts, none of the respondents refused to answer the questions, nor did any provide a “don’t know” response. The distribution of responses suggests that mothers were generally able to use the given response options appropriately.

Table 3. Answers Provided To The Eating Habit Questions By Wave 1 Cognitive Interview Respondents

Food Item	Question Response Options						
	Child did not eat/drink during the past 7 days.	1 to 3 times during the past 7 days.	4 to 6 times during the past 7 days.	1 time per day.	2 times per day.	3 times per day.	4 or more times per day.
Milk	1	0	0	1	6	0	1
100% juice	0	3	2	3	0	1	0
Drinks not 100% fruit juice	0	3	2	3	1	0	0
Fresh fruit	0	2	1	1	5	0	0
Green salad	3	5	1	0	0	0	0
Potatoes (not fried)	3	5	1	0	0	0	0
Carrots	2	4	2	1	0	0	0
Other vegetables	2	0	3	0	3	1	0
Fast food	3	6	0	0	0	0	0
Candy, ice cream, cookies, cakes, brownies, or other sweets	0	1	1	7	0	0	0
Salty snacks	0	5	2	1	1	0	0
French fries or fried potatoes	1	6	2	0	0	0	0

Table 4 provides the mean ratings for ease of answering the questions. Those mothers who completed a cognitive interview were asked to rate the difficulty of each question. Specifically, they were asked whether each question was “really easy,” “kind of easy,” or “not so easy.” A mean rating was calculated for these responses as a way of targeting conceptual understanding. Similar 3-point rating scales have been used successfully in other cognitive development studies. Table 4 shows the difficulty ratings for each survey item, ranked by the mean difficulty rating. The results suggest that, overall, the mothers interviewed found it fairly easy to answer the questions. On average, mothers rated the items as somewhere between “really easy” and “kind of easy.” Overall, ratings of “not so easy” were relatively rare.

Questions on drinks that were not 100% fruit juice, green salad, fast food, and French fries or fried potatoes were the easiest for mothers to answer, perhaps because these items were consumed less frequently over the course of seven days and therefore easier to recall because child consumption of them was rare, or they were consumed in the context of a “special treat” or event (birthday celebration, a party, or Halloween for example).

Table 4. Mean Ratings Of Ease Of Answering The Eating Habit Questions

Question Number	Food Item	Mean Rating	Rating Scale		
			Very Easy	Somewhat Easy	Not At All Easy
		1= "very easy" to 3 ="not at all easy"	(%)	(%)	(%)
Q3	100% juice	1.6	56	33	11
Q1	Milk	1.4	67	22	11
Q5	Fresh fruit	1.4	67	22	11
Q8	Carrots	1.3	78	11	11
Q9	Other vegetables	1.3	67	33	0
Q7	Potatoes (not fried)	1.2	78	22	0
Q11	Candy, ice cream, cookies, cakes, brownies, or other sweets	1.2	78	22	0
Q12	Salty snacks	1.2	78	22	0
Q2	Type of milk	1.1	78	11	0
Q4	Drinks not 100% fruit juice	1.0	100	0	0
Q6	Green salad	1.0	100	0	0
Q10	Fast food	1.0	100	0	0
Q13	French fries or fried potatoes	1.0	100	0	0

The most difficult questions for mothers to answer were those on consumption of 100% fruit juice, milk, fresh fruit and carrots, as depicted in table 4. Table 5 presents the mean ratings for certainty of answers. For each eating habit question, respondents were asked how sure they were of their answers. Respondents might give an answer that does reflect what their child consumed, while being unsure of the answer. The existence of this type of tension indicates that mothers may have felt unsure about the soundness of their answers; methods used to arrive at an answer or were unclear about some of the terminology being used in the question. In the interviewing, respondents' answers to these questions served as a basis for further probing into how mothers arrived at their answers. Additionally, these responses were used as the basis for calculating a "mean certainty rating" for each of the concepts. Based on the analysis of the terminology used, which identified few problems, the mean certainty ratings highlight food items where mothers were unsure of whether their answer was accurate, accounting for for all of the food their child may have consumed. When compared to the mean ratings calculated for ease of the question (table 4), the answers in table 5 seem to confirm that mothers did indeed experience some difficulty in answering questions on consumption of milk, 100% fruit juice, carrots and fresh fruit.

Further analysis of the cognitive responses indicates that many mothers experienced some difficulty with these questions (Q3, Q1, Q5 and Q8) because they encountered difficulty in recalling and tallying the number of times their child consumed 100% fruit juice, milk, fruit, and carrots. Many mothers indicated that these items were consumed daily, and that they had a baseline schedule for offering them to their child. However, difficulties were encountered because their child's preferences and consumption fluctuated from day to day. For example, if a child did not finish his or her milk at breakfast, the mother may have offered the milk later in the day to compensate for this non-consumption, which was outside of "normal" milk drinking times for the child. Additionally, as will be discussed further below, about one half of the mothers interviewed indicated that it was easier to think about their child's consumption for these specific items on a daily basis (within the past twenty-four hours), and was difficult to remember what was consumed over a seven-day period of time. One half of the mothers did express the ability to recall what their child had consumed over the past seven days by thinking about consumption in terms of eating a particular item a daily basis. Conversely, mothers reported less difficulty and higher certainty of their responses in regards to items such as green salad, French fries, and drinks that were not 100% fruit juice because consumption of these items was extremely rare or occurred in the context of an event, such as a sporting activity, party or other special occasion.

Table 5. Mean Certainty Ratings for the Eating Habit Questions

Question Number	Food Item	Mean Rating	Rating Scale		
		1= "very sure" to 3 = "not at all sure"	Very Sure	Somewhat Sure	Not At All Sure
			(%)	(%)	(%)
Q1	Milk	1.4	67	22	11
Q3	100% fruit juice	1.3	78	11	11
Q8	Carrots	1.3	78	11	11
Q5	Fresh fruit	1.3	67	33	0
Q9	Other vegetables	1.3	67	33	0
Q11	Candy, ice cream, cookies, cakes, brownies, or other sweets Sweet snacks	1.2	78	22	0
Q13	French fries or fried potatoes	1.2	78	22	0
Q4	Drinks not 100% fruit juice	1.1	89	11	0
Q7	Potatoes (not fried)	1.1	89	11	0
Q12	Salty snacks	1.1	89	11	0
Q6	Green salad	1.0	100	0	0
Q2	Type of milk	1.0	100	0	0
Q10	Fast food	1.0	100	0	0

Understanding the Language Used In Each Question

Overall, mothers in the interviews and focus groups did not struggle with any of the terminology used in the question. Mothers in both the one-on-one interviews and focus group defined “100% fruit juice,” “sports drinks” and “green salad” in similar ways. However, there were several questions where mothers wanted more clarification about what foods were actually being referenced. A general comment emerging from the focus group was that the questions on fruits, vegetables, and snacks were relatively clear about what to exclude, but not clear on what to include. For example, three mothers in the one-on-one interviews and slightly more than half of the mothers in the focus group questioned what foods were included with potatoes as a category for Q7. The main issue arising for mothers in the cognitive interviews was whether to include items such as instant potatoes in their responses, while others wanted to know if tater tots fell in the category of “fried potatoes.” In the focus group, most of the nine mothers indicated that they were not sure where to include sweet potatoes, or potatoes that were the main part of a dish, but were mixed with other things, like scalloped potatoes or mashed potatoes.

Other areas where mothers wanted clarification on the terminology, or where their responses were inconsistent, are described below. This discussion includes both the cognitive interviews and focus group.

Regular milk. “Regular milk” is included as a response option in Q2. In both the cognitive interviews and focus group, there was some confusion among the respondents about what “regular milk” actually was. Some respondents thought it was the same as whole milk, while others believed that “regular” referred to the type of milk that was regularly consumed by their child (for example, 2% milk). Others thought that it was every other kind of milk besides soy milk, and two respondents of the 18 in this wave of the study thought it was the kind of milk one would get directly from a farm.

Other vegetables. In regards to the question on additional vegetables consumed (Q9), about half of the mothers participating in the focus group, and 2 cognitive interviewees (6 of 18 total respondents or 33%) were not sure how to count dishes that included both rice and vegetables, or similarly soups with vegetables. They simply did not include these dishes in their responses. This confusion provided an opportunity for mothers to undercount the other types of vegetables consumed by their child.

Fast food. The description provided by mothers on how they arrived at their answers for this question revealed a lack of clarity about the concept “fast food.” Overall, among both the cognitive interviewees and focus group participants, half of the mothers conceptualized fast food as any eating outside of the home, so even if the child had an entree that wasn't from the basic kids menu (French fries, chicken nuggets, hamburger) at a real restaurant, some mothers counted this as “fast food.” The remaining respondents viewed “fast food” as the type of food specifically consumed at the chains listed in the question. The effect of this conceptualization was that mothers did not count items that were not eaten at the specific chains listed in the question, so there was a gray area for food eaten at places like Boston Market, Subway, and Arby's, or Chinese restaurants. In reviewing the cognitive data, the respondents generally mentioned the specific restaurant in connection with describing what their child ate, but there were two mothers who wondered whether to include delivery of food (pizza, Chinese) they had ordered.

Question 11 on consumption of candy, ice cream, cookies, cakes, brownies, or other sweets, and Question 12 on consumption of potato chips, corn chips (Fritos, Doritos), Cheetos, pretzels, popcorn, crackers or other salty snack foods. While all of the mothers in Wave 1 were able to come up with answers for these questions, the discussion of their responses revealed that mothers might be tallying foods inaccurately, based on how they conceptualize the items as a part of a specific food category, for example, “sweet snacks” versus “salty snacks”, or “snacks high in fat.” In particular, mothers participating in the focus group seemed to be somewhat unsure of their responses.

The focus group findings indicated that a few mothers felt uncertain about their responses to Q11 and Q12 because they were unsure of the core distinctions dividing foods that should be a part of their responses for Q11 versus those that should be included in responses for Q12. For example, some mothers thought the major distinction was the amount of fat in a snack, while others perceived the questions to be about “good snacks” versus “bad snacks.” Mothers were also reluctant to lump things like crackers or popcorn with things they perceived to be worse for their children, such as “bad” salty snacks like chips. Mothers also didn't know how to classify things like Fruit Roll Ups, granola bars, or fruit bars. These concerns combined to create some uncertainty about the accuracy and appropriateness of the answers mothers provided to these questions, slightly increasing the difficulty experienced in deriving an answer to these questions, as the ratings in table 4 present.

Soda pop. There was some indication that the terminology used in Q3 on the consumption of drinks that are not 100% fruit juice could cause parents to intentionally underestimate their response. Two mothers who were interviewed indicated that the words “soda pop” had a negative connotation because parents did not want to report their child had consumed these types of drinks. For example:

Wave 1 Respondent 3: “Parents don’t want to say their child had “soda” because of the negative connotation.”

Additional descriptive discussion provided by some mothers in the cognitive interviews and the focus group for Wave 1 indicated that parents felt somewhat sensitive about the topic of soda pop, as they made it a point to communicate that they were conscious of the negative health effects of these types of drinks. For example, slightly fewer than half of the mothers in both the interviews and focus group very assertively commented that they never ever allowed their child to consume soda pop, but then reluctantly acknowledged that if their child had attended a birthday party or similar event over the past seven days, they most likely would have consumed soda pop. Other parents shared that they did try to consciously limit the amount of sugar their child consumed, so soft drinks and even drinks that weren't 100% juice weren't “the best.” For example:

Wave 1 Cognitive Interviewee 2: “We don’t have it [soda] at home regularly.”

Based on these responses, it might be the case that parents focus on drinks that are not 100% juice and sports drinks when providing an answer, and intentionally ignore or misrepresent the amount of soda consumed because of this sensitivity to a socially less desirable drink for young children. Thus, the question's wording might unintentionally provide parents with an "out" for under-reporting consumption of soft drinks by grouping this item with other drinks that are perceived as less sensitive because they are not as "bad" for their child.

Finally, all of the mothers in the focus group, and about half of the cognitive interview respondents (13 respondents) indicated that the questions are clear about what to exclude, but not clear about what to include. This impacted the answers that mothers provided for the questions on potatoes, as mentioned earlier, but also for the questions on eating fruits other vegetables and snack items.

Recall Ability And Preferences for Answering For Times Per Day Versus Times Over The Course Of A Week

- a. What time period do respondents feel more comfortable with, in responding to the questions—for example, the past 24 hours or the past week?

Based on the analysis of data, mothers were able to recall what their child consumed over the past twenty-four hours more easily than over the past seven days. It was easier for mothers to come up with a response for one day, but not necessarily their preference. This was due to the fact that the response for one day may not have reflected the full range of what their child consumed, and mothers did express some sensitivity to sharing that their child had consumed appropriate amounts of healthy choices, such as milk, vegetables, carrots, and drinks that were not 100% fruit juice. For some mothers, answering questions on green salad, other vegetables, French fries and fast food consumption for only the past twenty four hours would greatly reduce the likelihood of their inclusion and suggest that their children do not consume these items at all, rather than in limited amounts. Many mothers in both the cognitive interviews and focus group indicated that for items that were consumed more frequently, it was easier to use the daily response options rather than the number of times of the past seven days, because it was too difficult to remember the detail about opportunities for the child to consume the item over the past week at one time.

In response to the need to select one choice in answering a question, many mothers commented that they wished the questions were clearer about whether an average response was a correct answer, particularly if they wanted to use the daily response options. This was true for providing an answer for only the past twenty-four hours as well. A repeated request by mothers in the cognitive interviewing was for the questions to ask about the average week or day, or the normal pattern, rather than the specific consumption of food items. Generally, mothers seemed to express a preference for providing an average response over a few days or a week when indicating what their child had consumed. When asked, how many days they could best recall their child's consumption, most mothers initially indicated that they could do so for up to a week,

but that they could best recall what had happened for a more limited range of days, such as the past three days. Additional reasons for this preference were pursued further in Wave 2 of the study.

Difficulties in Using the Response Options for Responding for the Past Seven Days. When considering the issue of providing a response for the past week, many mothers in both the cognitive interviews and focus group struggled with addressing the fluctuation from day to day in the kinds of foods their child may have consumed, particularly for items consumed regularly, such as milk, fruits and vegetables and 100% fruit juice when providing a response. A key emerging theme was the existence of a tension between the desire to be accurate in their responses and the inability to remember every opportunity for consumption of the particular food item. The accompanying conversations with mothers provide some limited indication that this was in part due to the desire to “talk a good diet,” as some mothers provided commentary on the health benefits of particular choices. Mothers repeatedly wanted to provide the most accurate answer in their responses, particularly in regards to questions about healthy foods choices, like vegetables and fruits. For questions on consuming French fries or fried potatoes, fast food and green salad, mothers more readily supplied answers in terms of times per week, primarily because their child rarely ate these items, or the consumption of the item occurred at limited intervals, like a “dine out night.”

Mothers in the focus group repeatedly expressed the desire for an option for “1 to 2 times per day.” Recall that some mothers in the cognitive interviews felt frustrated by their inability to come up with what they believed to be an accurate response due to the daily fluctuation in their child’s actual consumption. A majority of mothers in the focus group recommended that a response option of “1 to 2 times per day” be added so that they could produce more accurate answers of what their child consumed. Some mothers indicated that this option would help them to not develop an average response, but to more accurately reflect what was consumed, particularly as they were tallying times of consumption on a daily basis. Mothers believed that such a response option would allow them to honestly answer for times when they were not exactly sure how much their child had consumed, but were certain of the range of times when consumption took place. For example, many mothers know their child had consumed at least one glass of milk per day, but there was a possibility the child had two glasses, due to other events. Rather than guessing two glasses or selecting 1 glass, mothers wanted a response option that allowed them to answer with the best average of consumption for the day. The desire for this response was also expressed for responding for only the past twenty-four hours as well.

Using the Response Options

- b. Are the response options suggested by ERS appropriate? Are respondents able to use these response options to describe their children’s behavior? If not, are there changes in response options that would be more appropriate?

A notable finding from Wave 1 was that mothers used a variety of cognitive strategies to develop their answers, often combining methods to develop an answer for one question. The discussion of mother's strategies for arriving at an answer revealed that recalling what their child ate over the past seven days or even for the past twenty-four hours was not without some challenges.

Strategy 1: Recall Of Preferences And Events

Some mothers based their answers on a combination of their recollection of key events over the course of a week (or day), and the kinds of foods they purchased, prepared or bought over the course of the week (or day). For example, some mothers indicated that they knew their child consumed a particular food item because they had prepared it twice over the past seven days and the child normally liked to eat the specific item. This kind of strategy seemed most effective when considering a longer period of time.

Strategy 2: Recall Of Child Specific Eating Habits

Others mothers provided answers based exclusively on their child's eating habits. Questions on milk, carrots, and green salad were most often answered in this manner. Instead of answering for what the child actually ate over the course of the past seven days or the past day, some mothers provided answers that used their child's normal behavior to fill in gaps in recollection. In a modification of this, mothers based answers on approximation of what food was left in the refrigerator and their child's eating preferences.

Strategy 3: References

For some mothers, the presence of a menu, snacking policies at school or with afterschool sports, and rules established for eating away from home— either with a babysitter or with other relatives— helped them to determine what their child had consumed. Some mothers carefully reviewed the menu with a child to review the choices with them before a meal was purchased at school. For other mothers (six total respondents in Wave 1), the menu was relied upon as a source of what was normally served or generally offered to their child, without full knowledge or recollection of the specifics. In other words, some mothers determined that their child had not consumed an item at school because they did not recall seeing it on the menu, and it seemed inconsistent with what had been served previously. Some mothers who used the menu as a cue stated that they generally know what was on the menu, but not necessarily for the specific seven days being asked about. This general knowledge was helpful in eliminating specific foods that were never served or not available like snack foods and kinds of milk or fruit juice available at school, but less helpful in recalling items that were served, like fruit or other vegetables.

Many mothers, in both the interviews and particularly in the focus group, expressed some frustration because they could not determine precisely what their child had consumed. Four cognitive interview respondents indicated that this was a reoccurring problem for them in supplying an answer, while seven of the nine focus group respondents indicated that this was the

case. Upon further probing in both settings, some of these mothers resolved this tension by providing an average amount consumed by their child over the past seven days. Others provided an average based on what was normal in a seven-day period for their child, while still others simply did not include times when they could not be positive of what their child consumed in their answers, both in terms of answering for the past twenty-four hours and for providing a response covering the past seven days. Additional complications included how to calculate an amount consumed when the child may not have eaten all of the food offered. This complication existed for answering for just the past twenty-four hours and for providing answers over the past seven days.

Generally, mothers understood the time ranges described in the response options, and had no problem conceptualizing the past seven days, which was generally understood to include the weekend and previous five weekdays. However, mothers did have some difficulties in using the response options to classify their answer in the ranges provided. An emerging theme for mothers in both the interviews and focus group was struggling to understand the term “time” for their child’s consumption patterns. Three mothers in the interviews and six of nine mothers in the focus group indicated that they had some trouble with the questions because they wanted to respond in terms of a serving or a portion size, rather than a “time.” In thinking about “time” as a sitting or meal time, a majority of the focus group respondents expressed that it would be easier for them in many cases to supply the number of servings versus “time,” due to the fact that their child may eat either 1 carrot or a whole bag at one sitting, and this did not seem to be an accurate reflection of what was consumed. Still, when the issue of serving was raised, some mothers also noted that determining a serving could be equally problematic.

The cognitive interviewing and focus group revealed some areas when mothers grossly underestimated the number of times their child consumed a food item. The most common reason for underestimation stemmed from the fact that mothers often forgot to include times such as school, play dates, or sporting activities in their responses. Cognitive probing revealed that many mothers just didn’t think of these times automatically.

The follow up discussion revealed that mothers focused more on times when their child was with them in answering the question except for school, perhaps because it was easier to determine and answer. In some cases, as with the milk questions, the interviews indicated that the question wording was helpful by reminding them to include specific school meal times, such as breakfast or lunch. For questions that did not include this type of specific reference, mothers did not generally include outside activities that their child participated in their responses, such as play dates, after school care, or sporting events, unless they packed a snack.

This trend was also confirmed in the focus group discussion, where a majority of the mothers (six of nine) did not include the full range of times where their child may have eaten a snack or meal. A mother from the focus group commented that “*I totally forgot about soccer, and we provided the snacks this week.*” However, the underestimation also occurred because mothers did not want to count events that were not the norm. For example, if the child had attended a birthday party, or consumed Halloween candy, some mothers reluctantly provided an answer to consumption of sweets because it wasn’t the “norm” for their child.

There were some specific areas of underestimation that were related to how mothers interpreted the question. The data collection revealed that mothers are not always considering all of the

fruits and vegetables that their child may have consumed when answering the respective questions on carrots, potatoes, and other vegetables. Mothers most often struggled with coming up with a frequency for fruit or vegetable consumption for their child. Part of this was due to the fact that the item was consumed often by children, but not necessarily completely eaten at one sitting.

About a one third of the mothers interviewed one-on-one indicated that their child was able to go to the refrigerator and obtain a fruit or vegetable item as a snack with limited supervision. This practice of “self-serve snacking” is where the child goes to the refrigerator to have carrots or grapes and can have that fruit in unlimited quantities. The only way mothers reported being able to track the consumption of this type of food is that “when it is gone, it's gone.” The impact of this type of eating on the responses mothers provided in interviews and during the focus group was that mothers simply excluded these foods from their count, thus underestimating the fruits and vegetables their child may have consumed. Further probing revealed that mothers recalled that their children consumed these fruits and vegetables, but that they didn't count them because there wasn't any place to record them and no guidance on how to quantify the food being consumed as a “time.” It was difficult for mothers to determine when a “time” began and ended in regards to this type of snacking.

In the Wave 1 focus group, where this issue was discussed at length, some mothers thought a “time” might be however long it took the child to obtain and consume the food, while others were concerned about how much food should be included in the self-serve snacking period, particularly as the quantity could vary dramatically from day to day and even within the course of a day. In particular, four mothers in the focus group described their frustration at counting the one or two carrots their child consumed during a self-service snack with the same weight as the whole bag of carrots the child may have consumed as a latter snack during the day. One mother indicated that if she was specifically asked, she would have simply counted all of the vegetables or fruits that the child obtained in a self-service mode as one “time,” no matter how much food was actually consumed.

Other counting discrepancies arose as well. Some mothers determined that their child consumed a food item by the fact that they had prepared it or served it. This raised the issue of whether mothers automatically counted an item as being consumed, simply because they recalled offering it, rather than whether the child actually ate the item at a mealtime.

However, it was also the case that some mothers could clearly and accurately recall what their child had consumed both at home and at school because their child had few if any outside opportunities to consume food items outside of their presence. These four mothers communicated that:

Wave1 Cognitive Interviewee 3: “I know everything they put in their mouths.”

Wave1 Cognitive Interviewee 2: “I know what I serve him.”

Interestingly, further analysis revealed that most of these mothers either had a kindergarten child who did not attend school all day, or a child that did not receive a meal at school. In the remaining cases, serious food allergies necessitated a stricter schedule and monitoring by a parent to ensure that the child did not consume a prohibited item.

Notable Areas For Follow-Up In Wave 2

The findings from Wave 1 generally indicated that mothers were indeed able to answer the questions, but that some improvements could improve their ability to provide more accurate answers, as well as some limited clarification on the kinds of foods to include in their responses.

Most notably, all of the questions received an additional statement at the beginning designed to assist mothers in recalling all of the places where their child may have consumed a food item. This was done to address cases where mothers' descriptive statements indicated that they only thought about food that they served or prepared or eating that occurred in their presence. The addition of the statement was felt to help in cutting down on the gross underestimates mothers seemed to be making because they simply didn't consider all possible eating opportunities. Specifically, wording was added to the response option "regular milk," to help respondents better understand what regular milk referred to, as mothers in Wave 1 did not quite understand what was being referred to. Additional descriptive words were added to give mothers more detail so that they could properly respond to Q7 and Q9. Finally, clarifications were added to Q10 on fast food, and Q11 on consumption of candy, ice cream, cookies, cakes, brownies, or other sweets. These changes were not so great that they dramatically alter the meaning of the questions, but they were felt to provide needed clarity that would either improve mothers' ability to use the response options themselves, or provide more accurate answers based on their recollections.

The response option "1 to 2 times a day" was also added, although with caution. The main purpose for adding this response option to the Wave 2 questions was to determine whether this option would be widely used if offered, and how it might function in helping to resolve the tension between providing the best answer and accounting for fluctuation in a child's actual consumption. The Wave 2 cognitive interviews also included specific probes on answering times per day versus times per week. These were included to further develop the findings on answering preferences discussed under research question b, including answering for the past twenty-four hours, and to gather additional data on the implications of adding the "1 to 2 times per day" response option.